

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Previously Presented) A method for binding a work label switching path (LSP) with a protection LSP, comprising:

a Path Switching Label Switching Router (PSL) transmitting a first message which comprises a binding information to a Path Merging Label Switching Router (PML) to request for creating the protection LSP of the work LSP;

the PML router assigning a label for the protection LSP based on the first message, and returning a second message which comprises the binding information;

upon receiving the second message, the PSL router binding the work LSP with the protection LSP according to the binding information, and transmitting a notification message which comprises the binding information to the PML switched router; and

the PML router binding the work LSP with the protection LSP according to the binding information in the notification message,

wherein the binding information comprises an identifier of the work LSP, a type of the LSP, and a protection mode, and

wherein the PSL and PML are label edge routers.

2. (Previously Presented) The method according to claim 1, further comprising: before creating the work LSP, designating the PML router and the protection mode of the work LSPs at the PSL switched router; or, after creating the work LSP, designating the PML router and the protection mode of the work LSPs at the PSL switched router.

3. (Previously Presented) A method for binding a work label switching path (LSP) with a protection LSP, comprising:

in the process of creating the protection LSP, a Path Switching Label Switching Router (PSL) transmitting a first message which comprises a binding information to a Path Merging Label Switching Router (PML) to request for creating the protection LSP of the work LSP;

the PML router assigning a label for the protection LSP based on the first message, and returning a second message which comprises the binding information;

upon receiving the second message, the PSL router binding the work LSP with the protection LSP according to the binding information, and transmitting a notification message which comprises the binding information to the PML switched router; and

the PML router binding the work LSP with the protection LSP according to the binding information in the notification message,

if the protection mode for the work LSPs is 1+1 mode, the binding information comprises the work LSP identifier, LSP type, and the protection mode; and

if the protection mode for the work LSPs is 1:1, the binding information comprises the work LSP identifier, LSP type, the protection mode and selection mode of the return LSP in the 1:1 protection mode.

4. (Previously Presented) The method according to claim 19, further comprising, after the PML router receives the notification message, if it is determined that the protection is in the 1:1 mode and it is chosen to create the return LSP dynamically via signaling:

the PML router transmitting to the PSL router a third message of requesting for creating the return LSP, with the binding information included in the third message;

the PSL router assigning a label for the return LSP according to the third message, and returning a fourth message which comprises the binding information;

the PML router binding the work LSP and the return LSP based on the binding information of the fourth message, and transmitting to the PSL router a notification message which comprises the binding information;

the PSL router binding the work LSP and the return LSP based on the binding information of the notification message.

5. (Original) The method according to claim 4, wherein, if Resource Reservation Protocol (RSVP) is used to create the LSP, the first message and the third message are path messages in the RSVP, and the second message and the fourth message are Resv messages in the RSVP, and the notification message is Reservation Configuration (ResvConf) message in the RSVP.

6. (Original) The method according to claim 5, further comprising: extending a binding object in the RSVP, and extending the Path message, Resv message and ResvConf message to comprise information of the binding object to implement the binding of the work LSP and the protection LSP.

7. (Original) The method according to claim 4, wherein, if label distribution protocol (LDP) or constraint route-label distribution protocol (CR-LDP) is used to create the LSP, the first message and the third message are the Label Request messages of the LDP or CR-LDP, and the second message and the fourth message are the Label mapping messages of the LDP or the CR-LDP, and the notification message is a notification message in the LDP or the CR-LDP.

8. (Original) The method according to claim 7, further comprising: extending the binding Type Length Value (TLV) in the LDP or the CR-LDP, and adding the binding TLV to the Label Request message, Label mapping message and notification message to implement the binding of the work LSP and the protection LSP.

9. (Previously Presented) The method according to claim 2, if the protection mode for the work LSPs is 1+1 mode, the binding information comprises the work LSP identifier, LSP type, and the protection mode; if the protection mode for the work LSPs is 1:1, the binding information comprises the work LSP identifier, LSP type, the protection mode and selection mode of the return LSP in the 1:1 protection mode.

10. (Previously Presented) The method according to claim 9, after the PML router receives the notification message, if it is determined that the protection is in the 1:1 mode and it is chosen to create the return LSP dynamically via signaling, further comprising:

the PML router transmitting to the PSL router a third message of requesting for creating the return LSP, with the binding information included in the third message;

the PSL router assigning a label for the return LSP according to the third message, and returning a fourth message which comprises the binding information;

the PML router binding the work LSP and the return LSP based on the binding information of the fourth message, and transmitting to the PSL router a notification message which comprises the binding information; the PSL router binding the work LSP and the return LSP based on the binding information of the notification message.

11. (Previously Presented) The method according to claim 10, wherein, if the RSVP is used to create the LSP, the first message and the third message are path messages in the RSVP, and the second message and the fourth message are Resv messages in the RSVP, and the notification message is ResvConf message in the RSVP.

12. (Previously Presented) The method according to claim 11, further comprising: extending a binding object in the RSVP, and extending the Path message, Resv message and ResvConf message to comprise information of the binding object to implement the binding of the work LSP and the protection LSP.

13. (Previously Presented) The method according to claim 10, wherein, if the LDP or the CR-LDP is used to create the LSP, the first message and the third message are the Label Request messages of the LDP or CR-LDP, and the second message and the fourth message are the Label mapping messages of the LDP or the CR-LDP, and the notification message is a notification message in the LDP or the CR-LDP.

14. (Previously Presented) The method according to claim 13, further comprising: extending the binding the TLV in the LDP or the CR-LDP, and adding the binding TLV to the Label Request message, Label mapping message and notification message to implement the binding of the work LSP and the protection LSP.

15. (Previously Presented) The method according to claim 1, wherein data is transmitted via the work LSP and protection LSP simultaneously from PSL to PML, the PML receives the data from the work LSP in normal conditions, if there is a failure in the work LSP, the PML receives data from the protection LSP.

16. (Previously Presented) The method according to claim 1, wherein the binding occurs during creation of the protection LSP.

17. (Previously Presented) The method according to claim 16, wherein at least one node in the protection LSP is not part of the work LSP.

18. (Previously Presented) The method according to claim 17, wherein data is transmitted via the work LSP and protection LSP simultaneously from PSL to PML, the PML receives the data from the work LSP in normal conditions, if there is a failure in the work LSP, the PML receives data from the protection LSP.

19. (Previously Presented) The method according to claim 1, if the protection mode for the work LSPs is 1:1, the binding information comprises the work LSP identifier, LSP type, the protection mode and selection mode of the return LSP in the 1:1 protection mode, and wherein the PSL and PML are label edge routers.